AMENDMENTS TO THE DRAWINGS

The attached sheets of drawings include changes to Figures 1, 2, 3a and 9. The four sheets of drawings replace the replacement sheets filed September 2, 2004, including Figures 1, 2, 3a and 9. In Figure 1, the legend "ROAD" in block element 3 has been changed to -- LOAD --. Similarly, in Figure 2, the legend "ROAD" in block element 50 has been changed to -- LOAD --. In Figure 3a, the legend "Inslation" has been changed to -- Insolation --. In Figure 9, the legend "Performes" in step S130 has been changed to -- Performs --.

Attachments: Four Replacement Sheets, including Figures 1, 2, 3a and 9.

REMARKS

Upon entry of the present Amendment, claims 1-15 will be pending, of which claims 1-10 will have been amended to further clarify Applicant's invention and claims 11-15 will have been newly added for the Examiner's consideration. For at least the reasons provided herein, Applicant requests reconsideration and withdrawal of all rejections and an indication of the allowability of claims 1-15, in due course. Applicant submits that claims 1-15 are in condition for allowance.

Applicant notes with appreciation the Examiner's consideration of the documents cited in the Information Disclosure Statement (IDS) filed on March 2, 2004 in the present application. Applicant thanks the Examiner for returning, with the afore-noted Office Action, an initialed and signed copy of the Form PTO-1449 that accompanied the March 2, 2004 IDS.

Applicant notes with appreciation the Examiner's acknowledgement of Applicant's claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f), as well as confirmation of receipt of the certified copy of the priority document.

Upon entry of the present Amendment, Applicant will have amended Figures 1, 2, 3a and 9 to correct the misspellings of certain terms. For example, the term "ROAD" found in block element 3 of Figure 1 and block element 50 of Figure 2 has been corrected to its correct spelling, "LOAD." Further, the term "Inslation" in Figure 3a and the term "Performes" in Figure 9 have corrected to recite, "Insolatoin" and "Performs," respectively. Applicant notes that while the drawings have not been formerly accepted on the Form PTOL-326 (which accompanied the above-noted Official Action), the drawings have not been objected to in the Official Action. Accordingly, absent any evidence to the contrary, Applicant believes that the replacement sheets of drawings filed September 2, 2004 appear to have been acceptable to the Examiner. Thus, upon entry of the present Amendment, the replacement sheets of drawings for Figures 1 and 2, should be acceptable to the

Examiner and no further action should be necessary on the part of Applicant with regard to the drawings.

The above-noted Official Action contains two separate grounds of rejection. In particular, claims 1 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite because of the terms, "pre-determined communication method" and "pre-determined method." Further, claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over HAN et al. (Korean Patent Application Publication No. 1020030013661) in view of TATSUYUKI et al. (Japanese Patent Application Publication No. 2003-5849). Applicant respectfully traverses these rejections and requests reconsideration and withdrawal of the same, and an indication of the allowability of claims 1-10 in the next Official communication.

Regarding the rejection of claims 1 and 10 under 35 U.S.C. 112, second paragraph, Applicant submits that upon entry of the present Amendment, claims 1 and 10 will have been amended to delete the terms "pre-determined communication method" and "pre-determined method." Accordingly, Applicant believes that Applicant has overcome the rejection. Therefore, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 1 and 10 under 35 U.S.C. 112, second paragraph, in the next Official communication.

Regarding the rejection of claims 1-10 under 35 U.S.C. 103 based on HAN and TATSUYUKI, Applicant traverses the rejection. Applicant submits that HAN and TATSUYUKI, whether taken alone, or in any proper combination, do not teach or suggest, *inter alia*, receiving real-time data from one of a data detector and a user based on an operating mode, in the manner recited in, e.g., independent claims 1 or 6. (Applicant notes that support for the amendments made to claims 1 and 6 may be found, for example, in paragraph [64] of the Specification .) Additionally, Applicant submits that one of ordinary skill in the art would not have been motivated to combine HAN and

The present invention is directed to a system for implementing a virtual solar cell that has the same electrical characteristics as an actual solar cell for a given set of environmental conditions, including, for example, insolation, temperature and wind velocity. The invention of, for example, claim 1 includes a data detector, including a measurement sensor, adapted to collect external environmental data, a controller for receiving real-time data from the data detector, a power converter, and a data logger. The invention, as set forth, for example, in claim 6, is a method for implementing a virtual solar cell, comprising receiving external environmental data, classifying the received data in a predetermined format, generating a voltage-current model for obtaining an output characteristic of an actual solar cell on the basis of the received data, performing a current control according to the generated voltage-current model, generating a pulse width modulation signal according to a result of the performed current control, and controlling a power converter in response to the pulse width modulation signal. The present invention virtually implements the output characteristics of a solar cell that satisfies conditions such as the amount of insolation and temperature. Thus, the present invention is able to implement the performance of a solar cell without actually using a solar cell array.

Furthermore, the present invention is capable implementing any technology that theoretically models a voltage-current curve using an equation so as to implement solar cell characteristics corresponding to temperature and the amount of insolation desired by a user, reflecting actual measurement values, and separately controlling and monitoring an operation using wired/wireless control via a user interface.

Contradistinctively, HAN relates to a fuel cell simulator that is capable of virtually implementing dynamic and static characteristics of a fuel cell, which can be achieved under

conditions identical to the operating conditions of a fuel cell system, in real-time without requiring an actual fuel cell. HAN, due to the nature of the intended use of the HAN system, i.e., as a virtual fuel cell, is not concerned with environmental characteristics such as, for example, insolation or wind velocity, which are particular to the environment of a solar cell, but not a fuel cell. HAN differs from the present invention in a number ways. For example, HAN does not disclose or suggest a virtual solar cell or a controller as is recited in, for example, claim 1, much less receiving real-time data from one of a data detector and a user based on an operating mode, in the manner recited in, e.g., independent claims 1 or 6. Further, HAN has different objectives and different fields of application from that of Applicant's invention. Moreover, the simulator of HAN is implemented using different implementation methods from that of Applicant's invention.

The above-noted Official Action concedes, at page 4, that HAN "fails to disclose a virtual solar cell," and, instead, relies on TATSUYUKI to teach a solar battery simulator. Applicants submit that TATSUYUKI does not teach or suggest that which HAN is lacking, i.e., at least receiving real-time data from one of a data detector and a user based on an operating mode, as recited, e.g., in independent claims 1 or 6. Moreover, Applicants submit that one of ordinary skill in the art would not have been motivated to combine HAN with TATSUYUKI, as posited in the Official Action.

TATSUYUKI is directed to a solar cell electric power generation simulator and relates to a technology for providing databases for respective types of solar cells. Referring to a machine-language translation of the document, which is available from the website http:/www4.ipdl.inpit.go.jp/Tokujitu/PAJdetail.ipdl?N0000=60&N0120=01&N2001=2&N3001=2003-005849 (a copy is provided herewith for the convenience of the Examiner), TATSUYUKI discloses a solar-battery generation-of-electrical-energy simulator that calculates a predicted amount

of electrical energy that would be generated in a given environment. For this purpose, one of the main objectives of the TATSUYUKI system is to store data in a database regarding certain solar cells, certain inverters, various temperatures, various amounts of insolation, and a plurality of velocities of wind in order to predict an amount of power generation of a solar cell power generation system by performing modifications and calculations on the data stored in the database. However, TATSUYUKI does not teach or suggest, *inter alia*, receiving real-time data from one of a data detector and a user based on an operating mode, as recited, e.g., in independent claims 1 or 6. Moreover, TATSUYUKI does not teach or suggest a simulator that is capable of receiving a desired amount of insolation and a desired temperature and implementing the characteristics of a solar cell suitable for the input data in real-time without requiring the above noted database, thereby enabling solar cell-related experiments without requiring solar cells. Accordingly, any proper combination of HAN and TATSUYUKI would not teach or suggest, e.g., receiving real-time data from one of a data detector and a user based on an operating mode, as recited, e.g., in independent claims 1 or 6.

Furthermore, Applicant submit that one of ordinary skill in the art would not have been motivated to attempt to combine HAN and TATSUYUKI, much less combine the teachings of the two documents as posited in the Official Action. For example, HAN and TATSUYUKI are directed to entirely different fields of endeavor. HAN is directed to a field pertaining to fuel cells, which is primarily concerned with high temperatures and pressures and not concerned with insolation. Meanwhile, TATSUYUKI is directed to a solar cell, which is concerned with ambient temperatures and insolation and not concerned with pressure. Thus, one of ordinary skill in the art would not have been motivated to combine the teachings of HAN and TATSUYUKI, as posited in the Offical Action.

Accordingly, because any proper combination of HAN and TATSUYUKI would not teach or

suggest each and every element of the independent claims, and because one of ordinary skill in the art would not have motivated to combine HAN and TATSUYUKI, withdrawal of the rejection of independent claims 1-10 under 35 U.S.C. 103(a) based on HAN and TATSUYUKI is respectfully requested.

Further, claims 2-5 and 7-10 depend from claims 1 and 6 and are patentably distinguishable for at least the reasons provided above with respect to claims 1 and 6, as well as for additional reasons related to their own recitations.

Additionally, newly added claims 11-15, of which claim 15 is independent, are patentable over the cited art for at least the reasons provided above with regard to independent claims 1 and 6.

Applicants submit that they have discussed and distinguished the claimed subject matter of claims 1-15 from the cited documents. Thus, Applicants respectfully request that the Examiner reconsider and withdraw the rejections of claims 1-10 under 35 U.S.C. 103 based on HAN and TATSUYUKI, and indicate claims 1-15 as allowable in the next Official communication.

Thus, Applicants respectfully request reconsideration and withdrawal of all rejections, and allowance of this application to mature into U.S. patent, including claims 1-15.

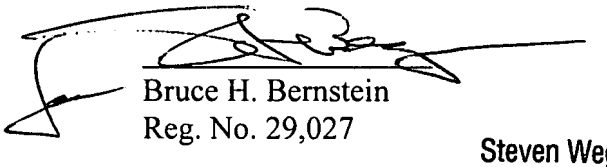
SUMMARY AND CONCLUSION

In view of the foregoing, it is submitted that the rejections under 35 U.S.C. 112, second paragraph, and 103 in the Official Action dated March 27, 2007 and communication of April 20, 2007 that restarted the time period for responding, should be withdrawn. The present Amendment is in proper form, and none of the cited documents teach or suggest Applicant's claimed invention. In addition, the applied documents of record have been discussed and distinguished, while significant features of the present invention have been pointed out. Accordingly, Applicant requests timely allowance of the present application.

Should an extension of time be necessary to maintain the pendency of this application, the Commissioner is hereby authorized to charge any additional fee to Deposit Account No. 19-0089.

Should the Examiner have any questions, please contact the undersigned at the telephone number provided below.

Respectfully submitted,
Gyu Ha CHOE



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